WHAT IS CLAIMED IS:

1. A method for real time determination the of mineral scale deposition rate from a formation fluid comprising:

A) placing an optical probe having a probe surface which can measure changes in refractive index at the probe surface, into contact with a formation fluid produced or being produced from an oil well;

B) measuring the changes in refractive index at the probe surface; and

C) determining the on-set and rate, if any, of mineral scale deposition from the formation fluid as a function of the changes in refractive index at the probe surface;

wherein:

i) the probe surface which can be monitored for changes in refractive index is in contact with the formation fluid;

ii) the probe, including the probe surface which can be monitored for changes in refractive index, is composed of a material which can withstand an extended period of contact with the formation fluid at the temperatures and pressures present in oil wells; and

iii) the determination of on-set of mineral scale deposition and the mineral scale deposition rate from the formation fluid takes place in real time.

2. The method of Claim 1 wherein the optical probe having a probe surface which can measure changes in refractive index at the probe surface is an ATR probe.

3. The method of Claim 2 wherein the ATR probe includes a means of measuring the refractive index change associated with a material in contact with the probe which is a photometer.

4. The method of Claim 3 wherein the photometer measures light in a wavelength range of from 400 to 1500 nanometers.

5. The method of Claim 4 wherein the photometer measures light in a wavelength range of from 500 to 700 nanometers.

6. The method of Claim 5 wherein the photometer measures light in a wavelength range of from 630 to 690 nanometers.

7. The method of Claim 4 wherein the photometer measures light in a wavelength range of from 800 to 900 nanometers.

8. The method of Claim 7 wherein the photometer measures light in a wavelength range of from 850 to 900 nanometers.

9. The method of Claim 8 wherein the photometer measures light in a wavelength range of from 870 to 890 nanometers.

10. The method of Claim 1 additionally comprising using an automated probe cleaning device to clean, calibrate, insert and extract the probe surface.

11. A method for controlling mineral scale deposition from a formation fluid comprising:

A) placing an optical probe having a probe surface which can measure changes in refractive index at the probe surface, into contact with a formation fluid produced or being produced from an oil well;

B) measuring the changes in refractive index at the probe surface;

C) determining the on-set and rate, if any, of mineral scale deposition from the formation fluid as a function of the changes in refractive index at the probe surface;

D) comparing the rate, if any, of mineral scale deposition, to a predetermined range of acceptable mineral scale deposition; and

E) effecting a change in the rate of addition, if any, to the formation fluid of an additive effective for preventing mineral scale deposition from a formation fluid ;

wherein:

i) the probe surface which can be monitored for changes in refractive index is in contact with the formation fluid;

ii) the probe, including the probe surface which can be monitored for changes in refractive index, is composed of a material which can withstand an extended period of contact with the formation fluid at the temperatures and pressures present in oil wells;

iii) the determination of the mineral scale deposition rate from the formation fluid takes place in real time; and

iv) the rate of addition, if any, to the formation fluid of the additive effective for preventing mineral scale deposition from a formation fluid is:

(1) increased when on-set of mineral scale deposition is detected or the mineral scale deposition rate is greater than the range of acceptable mineral scale deposition;

(2) decreased when no mineral scale deposition is detected or the mineral scale deposition rate is less than the range of acceptable mineral scale deposition; and

(3) unchanged when no mineral scale deposition is detected or the mineral scale rate deposition is within the range of acceptable mineral scale deposition.

12. The method of Claim 11 wherein the optical probe having a probe surface which can measure changes in refractive index at the probe surface is an ATR probe.

13. The method of Claim 12 wherein the ATR probe includes a means of measuring the refractance of a material in contact with the probe which is a photometer.

14. The method of Claim 13 wherein the photometer measures light in a wavelength range of from 400 to 1500 nanometers.

15. The method of Claim 14 wherein the photometer measures light in a wavelength range of from 500 to 700 nanometers.

16. The method of Claim 15 wherein the photometer measures light in a wavelength range of from 630 to 690 nanometers.

17. The method of Claim 14 wherein the photometer measures light in a wavelength range of from 800 to 900 nanometers.

18. The method of Claim 17 wherein the photometer measures light in a wavelength range of from 850 to 900 nanometers.

19. The method of Claim 18 wherein the photometer measures light in a wavelength range of from 870 to 890 nanometers.

20. The method of Claim 11 additionally comprising using an automated probe cleaning device to clean, calibrate, extract and insert the probe surface.

21. A system for controlling mineral scale deposition from a formation fluid comprising a fluid flow path for flowing formation fluid recovered from a subsurface formation; an optical probe having a probe surface which can measure changes in refractive index at the probe surface, associated with the formation fluid in the fluid flow path providing data corresponding to the rate of deposition of mineral scale from

the formation fluid in the fluid flow path; and a processor for determining from the data the rate of deposition of mineral scale from the formation fluid.